** TX STATUS REPORT **   AS OF   AUG 09 '95 /:02   PAGE.01

                                          HEWLETT PACKARD

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H	**INVENTION DISCLOSURE**		PAGE ONE OF 25
	PDNO	DATE RCVD	ATTORNEY TXL/19A

Instructions: The information contained in this document is COMPANY CONFIDENTIAL and may not be disclosed to others without prior authorization. Submit this disclosure to the HP Legal Department as soon as possible. No patent protection is possible until a patent application is authorized, prepared, and submitted to the Government.

Descriptive Title of Invention:
Internet Printing Model for Handheld Devices

Name of Project: ESQUIRT

Product Name or Number:

Was a description of the invention published, or are you planning to publish? If so, the date(s) and publication(s):
NO

Was a product including the invention announced, offered for sale, sold, or is such activity proposed? If so, the date(s) and location(s):

NO

Was the invention disclosed to anyone outside of HP, or will such disclosure occur? If so, the date(s) and name(s):
NO

If any of the above situations will occur within 3 months, call your IP attorney or the Legal Department now at 1-653-2001 or 408-653-8001.

Was the invention described in a lab book or other record? If so, please identify (lab book #, etc.)

NO

Was the invention built or tested? If so, the date:

Yes a prototype was developed to show the concept. This prototype was built on June 7th 1999

Was this invention made under a government contract? If so, the agency and contract number:

NO

Description of Invention: *Please preserve all records of the invention and attach additional pages for the following. Each additional page should be signed and dated by the inventor(s) and witness(es).*

A. Prior solutions and their disadvantages (if available, attach copies of product literature, technical articles, patents, etc.).
B. Problems solved by the invention.
C. Advantages of the invention over what has been done before.
D. Description of the construction and operation of the invention (include appropriate schematic, block, & timing diagrams; drawings; samples; graphs; flowcharts; computer listings; test results; etc.)

Signature of Inventor(s): *Pursuant to my (our) employment agreement, I (we) submit this disclosure on this date:* { 7/26/99 }

Employee No.	Name	Signature	Telnet	Mailstop	Entity & Lab Name
154155	JEFF MORGAN		857-2501	1U17	HPL/ISAL
148158	Bill Serra		857-8041	1U17	HPL/ISAL
					Entity & Lab Name
Employee No.	Name	Signature	Telnet	Mailstop	Entity & Lab Name
Employee No.	Name	Signature	Telnet	Mailstop	Entity & Lab Name

(If more than four inventors, include additional information on another copy of this form and attach to this document)

Form 3.1 IDF.DOC Rev. 11/02/98

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H   **INVENTION DISCLOS◌E**   PAGE ONE OF _25_

PDNO ⎵⎵ 10992213   DATE RCVD **8·9·99**   ATTORNEY **TXL/ISAC**

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If any of the above situations will occur within 3 months, call your IP attorney or the Legal Department now at 1-553-3061 or 408-553-3061.

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Employee No.	Name	Signature	Telnet	Mailstop	Entity & Lab Name
154155	JEFF MORGAN		857-2501	1U17	HPL/ISAL
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			Telnet	Mailstop	Entity & Lab Name

(If more than four inventors, include additional information on another copy of this form and attach to this document)

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ESQUIRT

Invention Disclosure Notes:

A. Prior solutions and their disadvantages

Today there is limited support for printing from handheld devices such as Palm PC's. There are currently no known support from printing information from cellular, phones and pagers. All of the solutions that exist today print or display information based on the capabilities of the devices itself. For example if your device is greyscale then the display and printed information will be in greyscale. The Esquirt solution allows the output device to determine the quality of the information rendered. The handheld device provides the link to the information only and not it's own rendered information model.

B. Problems solved by the invention

There are a couple of problems that can be solved by this invention both of which rely on the use of the WWW to publish rich colorful information.

The first problem supports the mobile user but does not require that the handheld device is attached to a network. In this case the user can store on the device the URLs for information or services commonly accessed on the Internet. These URLs may refer to information services providing news and/or stock market information. The URLs may refer to corporate information such brochures, presentations, contracts etc. When the user wanted to access this information referred to by these URLs he/she would be able to use esquirt to render the information on a printer or a display device (e.g. a PC). The esquirt service would take care of accessing the information based on the URL and rendering it on the output device. This would provide the user with constant access to rich information (possibly time varying) without the need of a sophisticated mobile device (e.g laptop PC) or the constant attachment to a network.

The second problem solved by this invention supports devices with network connectivity. There are currently a number of efforts underway to provide web browsing capabilities to handheld devices. In many case this requires that the original web content be adjusted to conform to the limited display capabilities of the device. In general the content adjustment is traditionally just a summarization of the content that exists on the internet. The esquirt system would allows network enabled devices to browse the internet but if the user wanted to print the information or view more detail he/she would be able to do so using the full capabilities of the output or rendering device. In this case the summarized information would be sent to the device along with the URL to the real content on the network. This URL would be used by esquirt to access the web content and render the information. This notion provides for the notion of data paging services where a device such as a pager is sent a simple text message with a URL to the real information. The user of the pager sees the text message and is able to view the information as printed output or on a viewer.

C. Advantages of the invention over what has been done before

Existing solutions have required the following to achieve the above.
       1. A very sophisticated client device, something like a laptop.
       2. A network connection to access web based information
       3. A print driver for a local printer or access to network printer.
D. Description of the construction and operation of the invention

See Attached documents:

7/26/99

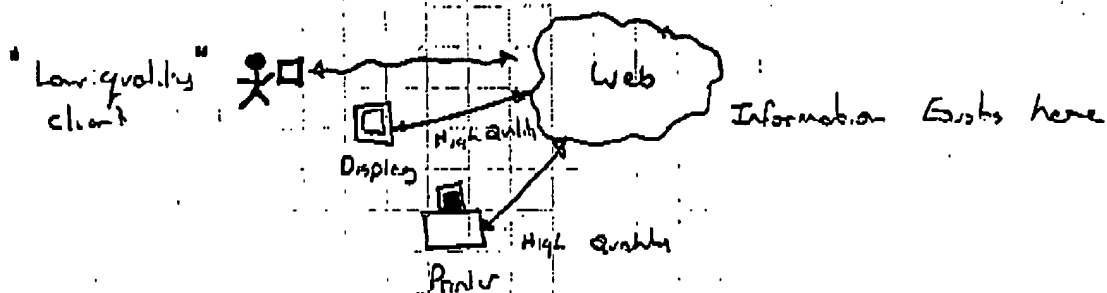7/27/99

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Big Issue is the Client ?

▼ Print model for Hand held devices
  Palm
  Jornado
  Phone
  Calculator

"Low quality" client   👤🖥 ← → ☁ Web   Information Exists here
                          🖥 High qualty
                          Display
                          🖨 High Quality
                          Printer

• Print from url is required
  Which Printer ?
  My Printer
  Printer with a context (eg. Nearest)

▼ Synchronization model for handheld devices

End of August is a timeframe.

Jornia connected to Blue Tooth

PDA
🖥 ← Z → ▯ ← Z →   Don't want to make the
Cellphone   phone the access path to
PDA   Appliances
🖥 ← Z → ▯ Blue Tooth → Z →

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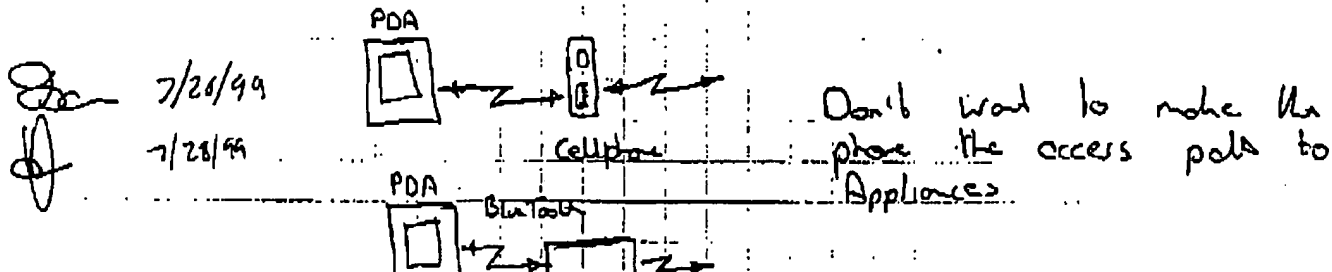
Internet based Printing Model for Handheld/Wearable devices

Project Concept

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Handheld Devices

Windows CE

Palm Pilot

Cell Phone

Pager
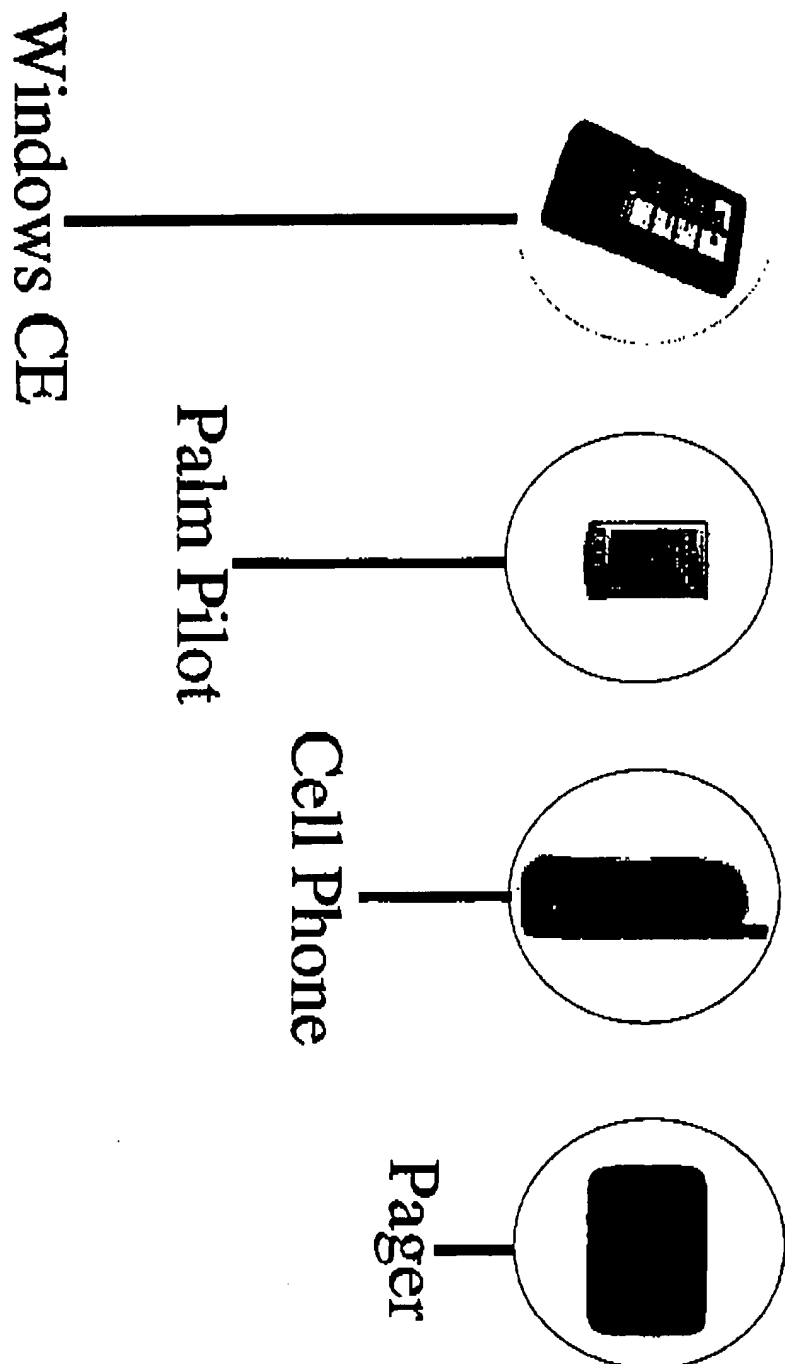
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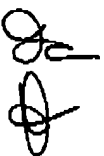
Device Characteristics

- Small Screen or no Screen

- Low resolution Color or Black and White

- Limited local resources

- Low power

- Limited connectivity

- Limited UI capabilities

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Internet Access

- Great demand to access Internet Data
- WEB, Email, Calendar, events etc.
- Emerging solutions leveraging existing cellular phone infrastructure.
- Small number of wireless ISPs exist
- In most cases content adaptation is required to support the devices capabilities and access constraints.

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Win-CE Access
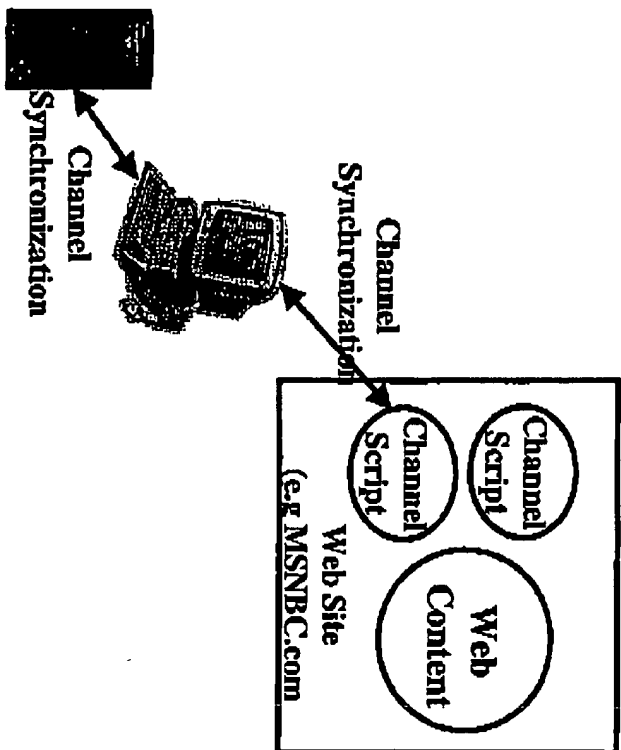
- Based on Channel Description Files (CDF).
- Synchronized web sites with content adaptation
- Offline browsing
- Server side scripts modify content to support device capabilities

Web Site (e.g. MSNBC.com)
- Channel Script
- Channel Script
- Web Content

Channel Synchronization

Channel Synchronization

Channel Synchronization

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Palm Pilot Access

Web Clipping Proxy Server
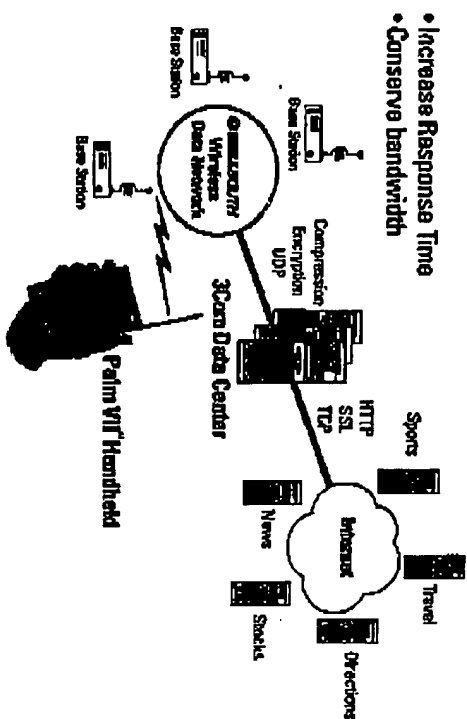
- Increase Response Time
- Conserve bandwidth

- Palm.net ISP services
- Based on a notion called "Web Clipping"
- Web Clipping applications support access to major services
- General content is manipulated via ISP
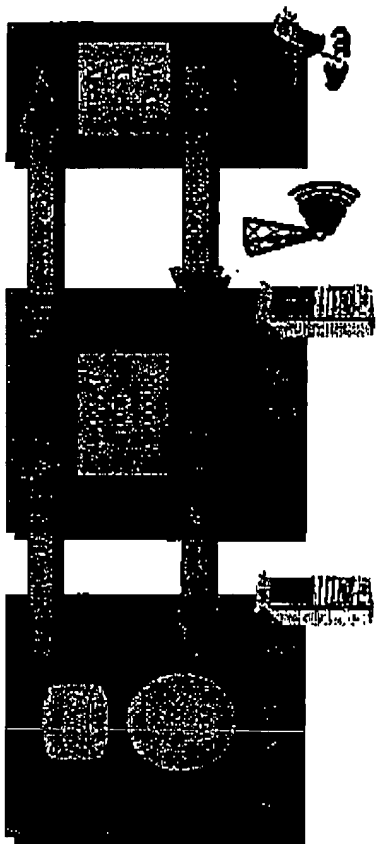
Cell Phone Access

- WAP consortium developing complete architecture to support cell phone access to internet data

- WAP gateways perform manipulation of content.

- Specialized services exist for WAP devices

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Pager Access

News Service
e.g. bloomberg.com

Summarization

Page

PRO
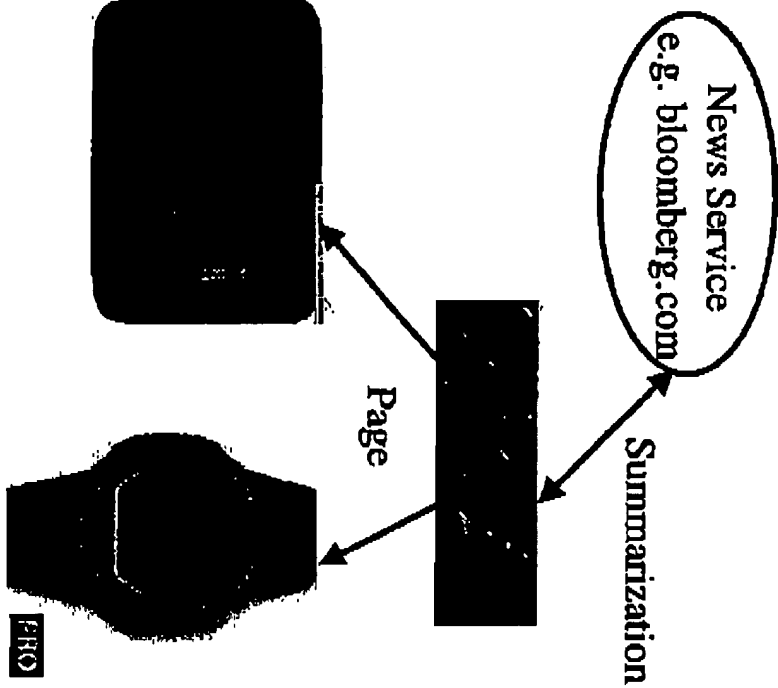
- No browser model support.
- Event based access to information
- Textual pages can summarize events backed by information on the web.

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Traditional Print Model
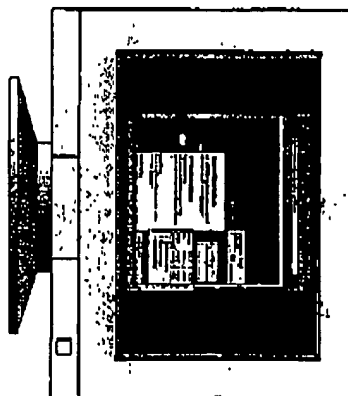
Local/Network Printer

What you see is what you get
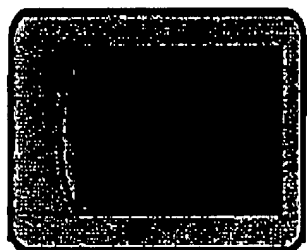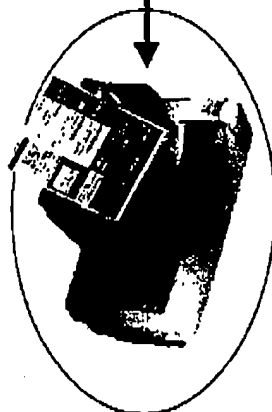
IR Squirt Protocol
(e.g. JetSend)

What you see is ALL you get
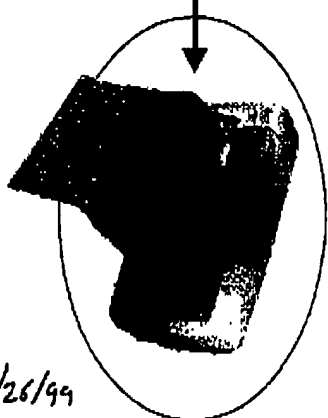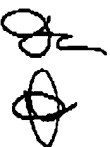
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What you see is ALL you get!

- Existing print and view model for handheld devices is based on the capabilities of the device.

- Information displayed on the device is a limited representation of rich information stored in the Internet.

- Printers have the capability to render rich information but can't access it in current print model

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WAP Access Example

SAMSUNG

B BG plc

British Gas News
Sun, 27 Jun 1999 2:00pm EDT

ABOUT BG

LATEST FINANCIAL RESULTS

NEWS FROM BG

PRESS RELEASES

THE MANAGEMENT

GAS INDUSTRY FACTS AND FIGURES

FUNDAMENTAL DATA

SEND A MESSAGE TO BRITISH GAS INVESTOR RELATIONS OFFICE

Lazard to Name 7-Member
Executive Committee to Lead the
Investment Bank Lazard Group to
Name 7-Member Leadership
Next Week (Repeats)
(Repeats to add creation of M&A
committee in paragraph 10.)

London, June 27 (Bloomberg) --
Lazard Group partners say
they will meet Thursday to
nominate seven executives to
lead the
world's largest investment
banking partnership as it merges
its
three units, based in New York,
London and Paris.

The move is designed to help
Lazard win new business in
advising companies on mergers
and acquisitions worldwide, while
also grooming one or more
successors to Chairman Michel
David

7/21/94
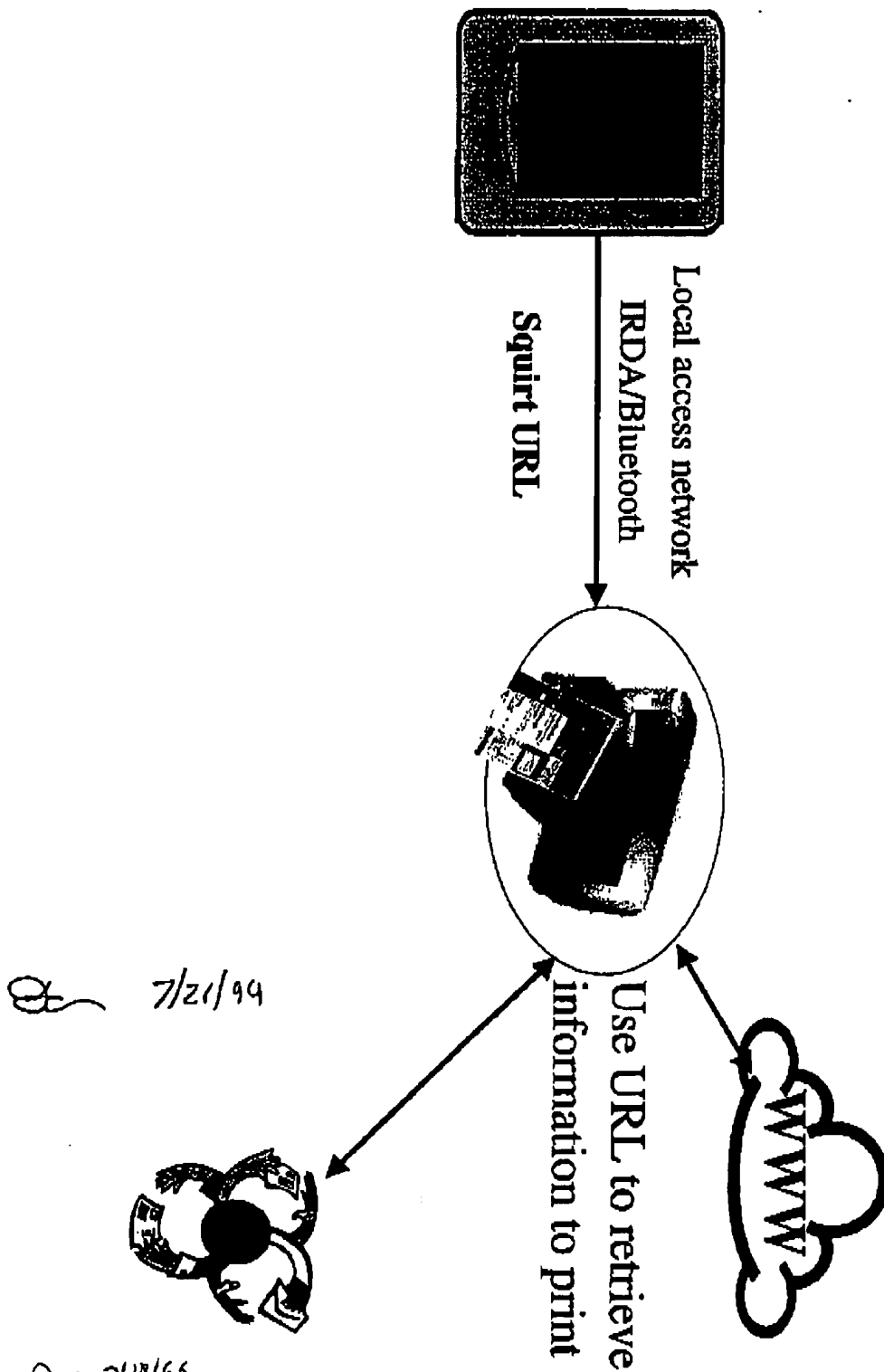
7/21/65

Win-CE Access Example

Internet Print Model

- Let the Printer access the information from the network and then render it on paper.

- Device needs to pass the printer a link that can be used to access the information.

- Exploit the web by using URL's as a naming mechanism

- Could be built into printer or provided as a network service.

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Internet Print Model

Local access network
IRDA/Bluetooth

Squirt URL

Use URL to retrieve
information to print

WWW

7/21/94

7/18/95

Issues

- How did the URL get to the client
- local communications with printer
- Rendering of information on the printer
- Security

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URL's how to get em

- Bookmarks maintained on the client device

- Sent to the device while browsing the network (requires internet access on the device, e.g. CDPD, WAP etc)

- Sent to the device as part of a page. Requires pager network access

- Sent or scanned from another device or beacon.

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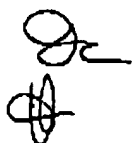
2(08/99
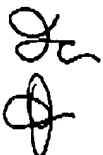
Local Communications

- Most PDA class devices have support for IR.

- Many popular phones and two-way pagers also support IR.

- Bluetooth hardware starting to emerge will be integrated into new cell phones.

- Only simple protocol support required to send a few bytes of information

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Rendering Information

- Could use the PC rendering path connected to local or networked printer

- Could set up a PC rendering path to a printer as a service (e.g Printer portal)

- Implement a generic HTML/XML print driver which can be embedded on the printer or via JetDirect type device (Print from URL).
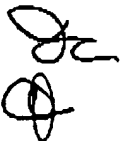
7/26/99
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Security
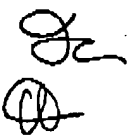
- Open Information: Information that does not require protection. News feeds, Stock, Sports. Simple password protection can be embedded in the URL.

- Authorized Information: Requires the presentation of a user ID. May be able to exploit cellular ID, or smart card. May require a password to be entered.

- Confidential Information: Requires support to protect the transport of information. Will require additional infrastructure support.

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Applications or E-services

- Printer Kiosks, support handheld device users.

- Can be placed in public areas for general use (e.g hotels, airports etc).

- Billing infrastructure required to secure payment. Verifone POS business opportunity
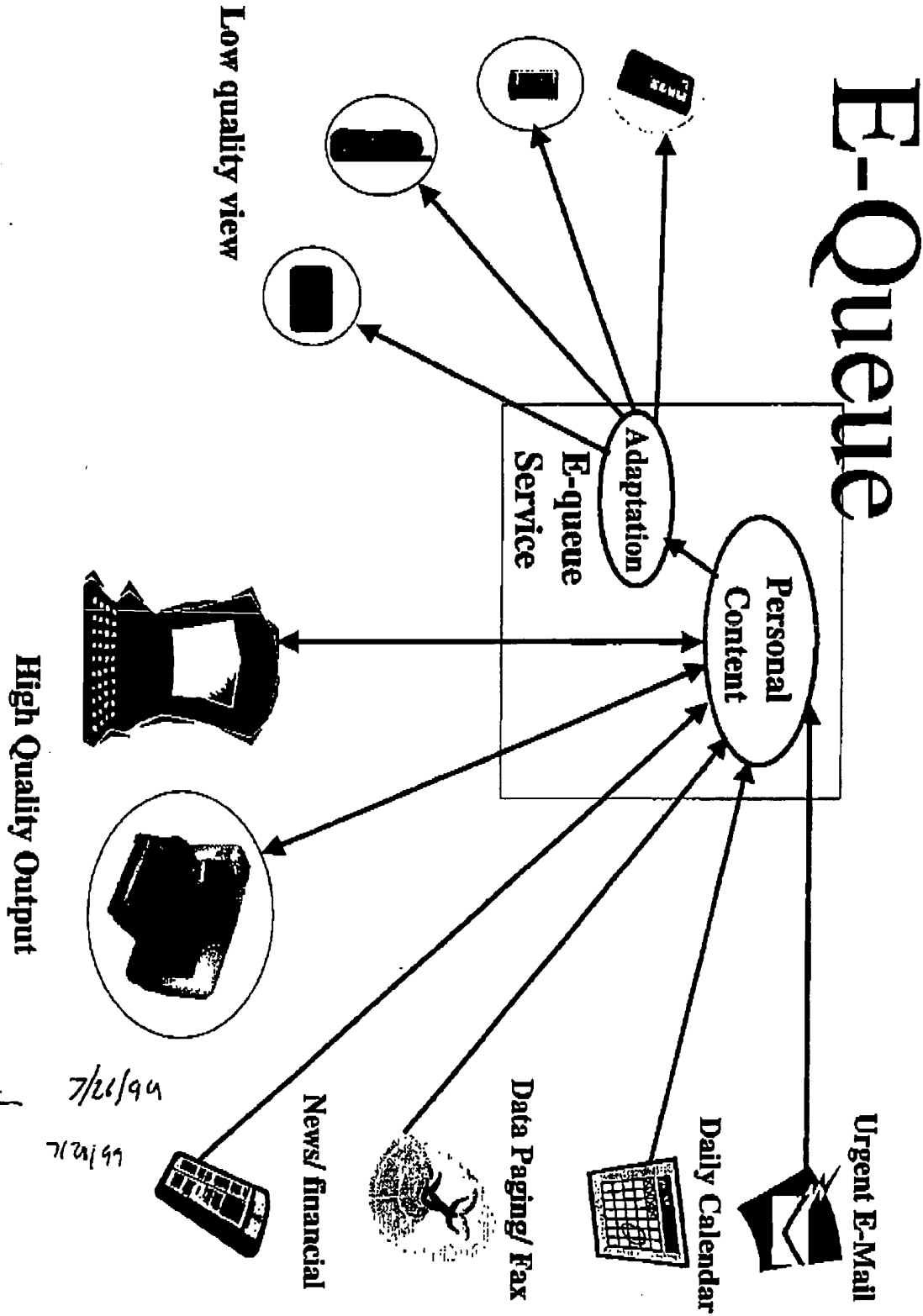
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E-queue

- Personal information queue.
- Information placed on the queue from applications (e.g email, fax etc)
- Other (authorized) users can leave information on the queue.
- Scheduled information can be placed on the queue.
- Print-out or view where ever you are
- Notification can be supported via pager or weblink

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E-Queue

Low quality view

High Quality Output

E-queue Service

Adaptation

Personal Content

News/ financial

Data Paging/ Fax

Daily Calendar

Urgent E-Mail

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